

A NEW AUSTRALIAN GENUS OF BITTACIDAE (MECOPTERA)

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ABSTRACT

Symbittacus scitulus gen. nov., sp. nov. is described from tropical rainforest in Queensland. It is most closely related to the E. Australian genus *Tythobittacus* and the neotropical genera *Nannobittacus* and *Issikiella*, but differs particularly in details of wing venation. A key to the Australian genera of Bittacidae is given.

INTRODUCTION

Bittacidae are the most widespread family of Mecoptera, with species in tropical and temperate regions of every continent. Generic diversity is greatest in tropical South and Central America (6 genera). Both Australia and North America have four genera, those in Australia being wholly endemic. To these may be added the new genus described below. QM Queensland Museum.

Symbittacus gen. nov.

Generally similar in appearance to *Tythobittacus* Smithers of eastern Australia and to the neotropical genera *Nannobittacus* Esben-Peterson and *Issikiella* Byers but differing particularly in details of wing venation. Wing slender in basal one-third; base to origin of M (divergence of M from M+Cu₁) 33% of total length in front wing, 29% in hind wing. Subcosta joins costa well beyond first fork of Rs in front wing. Two pterostigmal cross-veins. Basal sections of R and M+Cu₁ closely approximated or in contact from near base of wing to shortly before origin of M, where they diverge abruptly. Vein Cu₁ in front wing ends far beyond first fork of M; in hind wing Cu₁ lies alongside and in contact with marginal vein from about level of origin of Rs basad to level of humeral cross-vein (h). Vein 1A ends well before origin of M, 2A extending beyond h, in front wing; 1A apparently represented by very short cross-vein near level of h, 2A by short, diagonal cross-vein near wing base, in hind wing. One pair of stout, black setae on fourth tarsomere of hind legs. Compound eyes convergent anteriorly below antennal bases; frons between eyes less than width of ocellar triangle.

It is anticipated that further generic characters will be found when males are available for examination.

Type species: *Symbittacus scitulus*, sp. nov.

ETYMOLOGY

The name of the genus (Greek, *sym* = together, + *Bittacus*) refers to the extended contact of Cu₁ and the posterior marginal vein in the hind wings and of R and M+Cu₁ in both the front and hind wings.

KEY TO AUSTRALIAN GENERA OF BITTACIDAE

1. Hind basitarsus only about as long as fourth tarsomere; vein 1A in hind wing extending beyond level of origin of Rs; body colour black or reddish brown to dark orange-brown and black (6 species, Queensland, New South Wales, Victoria, South Australia, Western Australia, Tasmania)..... *Harpobittacus* Gerstaecker
Hind basitarsus 2-3 times as long as fourth tarsomere; vein 1A in hind wing extending only to level of origin of M or slightly beyond, usually in form of cross-vein from Cu₁ to marginal vein; body color light reddish brown to brown or dark grayish brown.....2
2. In hind wing, vein Cu₁ in contact with marginal vein along approximately three-fourths of length of former; apical section of 1A an extremely short cross-vein near level of h (1 species, Queensland). *Symbittacus*, gen. nov.
Vein Cu₁ in hind wing distinctly separated from marginal vein; 1A fused basally with Cu₁, its apical section appearing as a transverse or diagonal cross-vein.....3

3. Apical section of JA in hind wing diagonal between Cu₁ and margin; two cross-veins between 1A and 2A in front wing (1 species, Queensland)..... *Austrobittacus* Riek
 Apical section of 1A in hind wing transverse (rarely absent); one cross-vein between 1A and 2A in front wing 4
4. Wings tinged with yellowish brown, without pattern; stigma slightly darker brown; in male, cerci shorter than paired, subtriangular, nearly vertically oriented epandrial lobes of deeply divided ninth abdominal tergum (1 species, Queensland).....
 *Edriobittacus* Byers
 Wings lightly tinged with brown with faint shading of grayish brown at apex and along both series of cross-veins in disc of wing; stigma reddish; in male, cerci nearly twice length of broad, flattened, shallowly notched ninth abdominal tergum (1 species, New South Wales) *Tythobittacus* Smithers

Symbittacus scitulns sp. nov.

MATERIAL EXAMINED

HOLOTYPE: QM T8887; ♀; 1 km south of Cable Tower 6, Bellender-Ker Range, 40 km S of Cairns, N.Q. (17°16'S, 145°53'E); Malaise trap, mesophyll-vine forest, 500 m elevation; Earthwatch-Queensland Museum Expedition; 17.x.1981-5.xi.1981.

DESCRIPTION

Based on one female, preserved in alcohol.

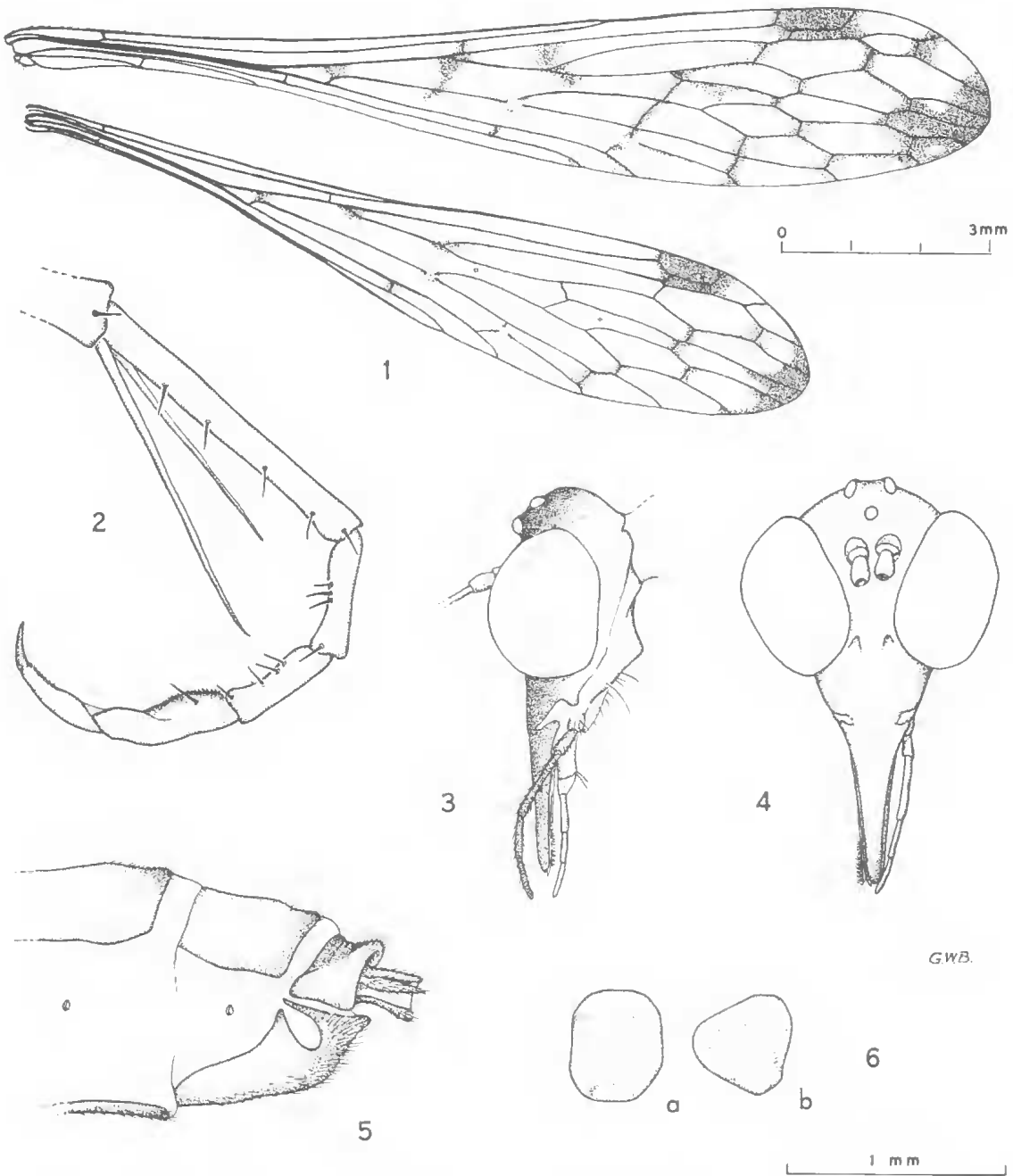
Head: Vertex, frons above antennal sockets and anterior surface of clypeus dark blackish brown, grading through brown to pale yellowish brown on occiput, postgenae and at sides of clypeus; frons including antennal sockets pale yellowish brown; apical half of labrum brown, basal half dark brown. Rostrum about 2.9 times as long as its basal width; maxillary palps mostly dark brown, paler near base; labium including labial palps pale yellowish brown. Terminal segment of maxillary palp as long as fourth segment. Eyes large, widest diameter (dorsoventral) about 39% of total length of head, protruding forward (Fig. 3) and conspicuously convergent below antennal bases (Fig. 4), separated by less than (about 83%) width of ocellar triangle. Ocelli of uniform diameter; upper frons concave below median ocellus. Antennae short, about 4.1 mm, comprising short cylindrical scape, ovoid pedicel and 18 slender flagellomeres (segmentation indistinct beyond

ninth flagellomere). Hairs on flagellomeres short, about 2-3 times diameter of respective flagellomere.

Thorax: Pronotum dark brown, darkest along anterior margin, with scattered short hairs especially medially but no prominent setae. Mesonotum and metanotum brown to dark brown, darkest on more elevated parts of scutum and on scutellum, yellowish brown along impressed suture lines, on postscutellum and on scutum adjacent to wing attachments; hairs short, most dense near mid-line. Pleural surfaces generally pale yellowish, but brown on propisternum and light brown on anterior surface of first coxa, anepisternum and preepisternum of mesothorax, making a vertical dark band below base of front wing, and on posterior surface of mesothoracic meron. Adjacent black spots on posterodorsal corner of mesothoracic meron and posteroventral corner of epimeron. Sparse hairs on anterior surfaces of coxae and anepisterna. Femora mostly yellowish brown, paler at base, abruptly darker brown near apex; tibiae yellowish brown except brown near apex. Spurs of front tibia subequal in length, about 0.4 as long as elongate, slender basitarsus. Spurs of hind tibia (Fig. 2) of unequal length, one longer than basitarsus, the other slightly shorter than basitarsus. Tarsi yellowish brown, claws reddish brown; hind tarsi about twice diameter of front tarsi but only about 0.6 as long; a single strong, black seta on each side of fourth tarsomere of hind tarsus.

Wings: (Fig. 1) highly iridescent, faintly tinged with brown and clouded with brown along most cross-veins, near forks of major veins and at apex. Pterostigma dark brown. Subcosta extending to level of first fork of Rs (FRs) in hind wing, beyond FRs in front wing. Subcostal cross-vein (Scv) just beyond origin of Rs (ORs) in front wing, just before ORs in hind wing. In front wing, vein 1A joins hind margin just before level of divergence of R and M+Cu₁, 2A extends slightly beyond level of h; no cross-vein between 1A and Cu₁. In hind wing, neither 1A nor 2A distinct due to close approximation of Cu₁ and marginal vein, but 1A may be represented by short cross-vein between Cu₁ and hind margin near level of h, and 2A by a short, diagonal cross-vein near wing base. Two pterostigmal cross-veins.

Abdomen of female: Terga 2-5 grayish brown with black antecostal borders; corresponding sterna slender, elongate, pale. Terga 6-9 dark brown with black antecostal borders; sterna 6-7



FIGS. 1-6. *Symbittacus scitulus*, new species, details of structure, female holotype. 1. Right wings. 2. Left hind tarsus, lateral aspect. 3. Head, left lateral aspect. 4. Head, frontal aspect to show convergence of eyes; right maxillary palp omitted. 5. Terminal abdominal segments, left lateral aspect. 6. Egg, side view (a) and end view (b). Upper scale, Fig. 1; lower scale, Figs. 2-6.

brown, 8 blackish brown. Tenth segment recessed beneath ninth tergum (in holotype); short, pale cerci and segment 11 protruding caudad (Fig. 5). Segments 2-4 slender, 5-6 enlarging posteriorly, 7 about same diameter as caudal end of 6, segment 8 of slightly smaller diameter. Eighth sternum completely divided by narrow membranous zone along ventral mid-line; each separate sternal plate deeply incised dorsolaterally, indicating division between sternum and its posterior prolongations forming lower valves of ovipositor (Fig. 5). Tergum and sternum 11 both truncate at apex.

Nearly mature egg dissected from abdomen subtriangular at ends (Fig. 6), with flattened surfaces shallowly impressed. Eggs confined to segments 5-8. Spermatheca not examined.

Body length, female (holotype), 13.0 mm, excluding antennae. Front wing 14.1 mm.

REMARKS

Symbittacus scitulus resembles *Tythobittacus macalpinei* Smithers (from New South Wales) in having the wings darkened apically and along certain cross-veins, as well as in the short 1A ending before the level of the divergence of M from Cu_1 and the basal approximation of R and $M + Cu_1$. *Symbittacus*, however, has three unevenly alternated series of cross-veins in the radial-medial field of the wing, while

Tythobittacus has but two series, each in much more nearly transverse alignment. In *Tythobittacus*, Cu_2 in the hind wing is distinctly separated from the marginal vein throughout its length, with 1A appearing as a cross-vein near the level of origin of M, whereas in *Symbittacus* Cu_2 lies against the marginal vein for three-fourths of its length.

ETYMOLOGY

The specific name *scitulus* (Latin, beautiful) refers to the patterned, iridescent wings and the varicolored head, thorax and abdomen.

ACKNOWLEDGEMENTS

For permission to examine and describe the single specimen upon which *Symbittacus scitulus* is based, I am indebted to Dr G.B. Monteith, of the Queensland Museum. He not only sent the specimen soon after it was captured but made repeated attempts to collect further individuals at the same remote locality. I also thank the U.S. National Science Foundation for support of my study of Mecoptera, currently by grant DEB 80-22342. The Earthwatch organization (Boston, Massachusetts) provided funds and volunteer labor to the expedition that collected this specimen.